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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/811,554	03/20/2001	Houng Joong Kim	503.39902X00	3907

20457 7590 06/18/2003

ANTONELLI TERRY STOUT AND KRAUS
SUITE 1800
1300 NORTH SEVENTEENTH STREET
ARLINGTON, VA 22209

EXAMINER

MULLINS, BURTON S

ART UNIT	PAPER NUMBER
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2834

DATE MAILED: 06/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/811,554	KIM ET AL.	
	Examiner	Art Unit	
	Burton S. Mullins	2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 10/15/02 & 2/28/03 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on 15 October 2002 and 28 February 2003 have been approved.

Claim Rejections - 35 USC § 102

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Claims 1 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Emery et al. ("Electric Motors and Generators Illustrated", pp.108-109, 1959). Emery teaches a so-called "mush winding" for stators or rotors (Fig.12) comprising a stator with a stator core having an even number of slots per pole per phase (the stator has forty-eight slots, four poles and three phases; Fig.12); armature windings contained in said slots, said armature windings being wound in a single layer distributed winding, i.e., "one coil-side per slot", wherein one of said slots arranged between two of said slots containing a first armature winding (e.g., B2) contains a second armature winding (A1) for a phase different from a phase of said first armature winding (B2), one of said slots arranged between said two of said slots containing said first armature winding (B2) contains a third armature winding (C1) for a phase equal to the phase of said second armature winding (A1), and coil end portions of said first (B2), second (A1) and third (C1) armature windings are arranged within a space on a side face of a back yoke portion of said stator core so that one of said second armature winding (A1) and said third armature winding (C1) is arranged in an outer peripheral side of said first armature

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winding (B2), and the other one of said second armature winding (A1) and said third armature winding (C1) is arranged in an inner peripheral side of said first armature winding (B2). The windings A1, B2 and C1 are all inherently arranged "within a space on a side face" of the stator core because the windings are single layer and have the same size, i.e., they are not concentrically wound. Further, because Emery's machine is three-phase, and because strands of the second winding A1 and third winding C1 are located in slots within the coil pitch of first winding B2, then one of these would necessarily be located on one side of the B2 winding, with the other on the other side of the B2 winding. To take another perspective, in constructing the machine of Emery, the C phase winding is first applied to the outer periphery of the slots, then the B phase winding is laid into the slots, and then the A phase windings are applied, so that at the end turns, "within in a space" on the side face of the stator, windings A1 and C1 are on opposite sides of B2.

Regarding claim 4, the motor of Emery inherently includes a rotor.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Emery in view of Payen (US 3,622,818). Emery does not teach that the winding end turn arrangement reduces the axial dimension of the stator coil, per se.

Payen teaches a motor winding for a three-phase linear motor including "interlaced" coils arranged in common layers (Figs. 3&5) with coil ends 32', 32" and 32''' of the same

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length and arranged to provide compact interspersing of the phases (c.2, lines 33-36). The coil end length is thereby shortened, so that losses are decreased (c.1, lines 28-33).

It would have been obvious to modify Emery and provide end turn arrangements per Payen since it would have been desirable to decrease losses associated with longer coil ends. Shorter coil ends would thus lead to a reduction in the axial dimension of the stator.

6. Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Emery in view of Kakutani et al. (US 6,141,865). Emery does not teach details of the stator coil manufacture. Kakutani teaches a method of manufacturing a divided stator comprising laminated stamped segments 14 (Fig.6) inserted into openings 48 formed by jig 34 to form a cylindrical shape, wherein the segments 14 contain the windings 16 spread out over the divided core and located in the individual slots between the segments. The apparatus and method of Kakutani makes possible an efficient winding operation.

It would have been obvious to provide a method of divided stator manufacture per Kakutani for the motor of Emery since it would have been desirable to efficiently wind the motors during manufacture.

Regarding multiple dependent claim 4, as depending from claim 2, the motor of Emery inherently includes a rotor.

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Emery in view of Kakutani et al. (US 6,141,865) as applied to claim 2 above, further in view of Payen (US 3,622,818). Neither Emery nor Kakutani teaches that the winding end turn arrangement reduces the axial dimension of the stator coil, per se.

Payen teaches a motor winding for a three-phase linear motor including "interlaced" coils arranged in common layers (Figs.3&5) with coil ends 32', 32" and 32''' of the same length and arranged to provide compact interspersing of the phases (c.2, lines 33-36). The coil end length is thereby shortened, so that losses are decreased (c.1, lines 28-33).

It would have been obvious to modify Emery and Kakutani and provide end turn arrangements per Payen since it would have been desirable to decrease losses associated with longer coil ends. Shorter coil ends would thus lead to a reduction in the axial dimension of the stator.

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Emery in view of Auinger (US 4,127,787). Emery does not teach a linear motor configuration for the motor, per se.

Auinger teaches three-phase, induction linear motor with windings capable of pole-changing. Auinger teaches that a rotary machine may also be converted to a linear machine (c.18, lines 31-34).

It would have been obvious to one of ordinary skill to modify Emery and provide a linear motor since, as disclosed by Auinger, rotary machines may be converted to linear machines.

9. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Emery in view of Kakutani (US 4,127,787) as applied to claim 2 above, further in view of Auinger. Neither Emery nor Kakutani teaches a linear motor configuration for the motor, per se.

Auinger teaches three-phase, induction linear motor with windings capable of pole-changing. Auinger teaches that a rotary machine may also be converted to a linear machine (c.18, lines 31-34).

It would have been obvious to one of ordinary skill to modify Emery and Kakutani and provide a linear motor since, as disclosed by Auinger, rotary machines may be converted to linear machines.


Response to Arguments

10. Applicant's arguments with respect to claims 1-5 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Burton S. Mullins whose telephone number is 305-7063. The examiner can normally be reached on Monday-Friday, 9 am to 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are 305-1341 for regular communications and 305-1341 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0956.


BURTON S. MULLINS
PRIMARY EXAMINER